ATSDR Record of Activity
Data Review/Response

UID #:1kw9 Date: 7 / 19 / 2006 Time: __ am __ pm ___

Site Name: Precision National Plating Services
City: Clarks Summit **Cnty: Lackawanna** **State: PA**
CERCLIS #: n/a Cost Recovery #: 305H Region: III

Site Status (1) NPL X Non-NPL __ RCRA _ Non-Site specific __ Federal
(2) _ Emergency Response X Removal __ Other

Activities

_ Incoming Call	_ Public Meeting*	X Health Consult*	_ Site Visit*
_ Outgoing Call	_ Other Meeting	_ Health Referral	_ Info Provided
_ Conference Call	X Data Review	X Written Response	_ Other

Requestor and Affiliation: John Mellow, PADEP North East Regional Office (NERO)

Contacts and Affiliation: Lora Werner, Dr. Karl Markiewicz, Dr. Clement Welsh, ATSDR R3; Joe Ianuzzo, John Mellow, Carl DeLuca, PADEP NERO; Dr. Kandiah Sivarajah, Dr. Mark White, PADOH, OSC Raj Sharma, Gerald Heston, EPA R3

Program Areas

_ Health Assessment	_ Health Studies	_ Tox Info-profile	_ Worker Health
_ Petition Assessment	_ Health Surveill	_ Tox Info-Nonprofit	_ Admin
_ Emergency Response	_ Disease Registry	_ Subst-Spec Resch	_ Other
x Health Consultation	_ Exposure Registry	_ Health Education	

Narrative Summary:
On June 15, 2006, during an ATSDR R3 site visit to the Precision National Plating Services Site in Clarks Summit, Lackawanna County, PA, ATSDR discussed the concerns about contamination from the Precision site and its potential effect on the nearby 20-acre Glenburn Pond with PADEP.

Glenburn Pond is located in Glenburn Township along Routes 6 and 11, and is rented by the Sportsman's Association of Glenburn. The Association has exclusive catch and release fishing rights to the pond and serves as primary caretaker of the pond. The pond is also used for ice skating and as a backup water supply for local volunteer fire companies. The pond is owned by the Natural Lands Trust (NLT).[1]

Precision is carrying out the investigation and cleanup at this site under a 1998 order and the supervision of the U.S. Environmental Protection Agency. ATSDR and cooperative agreement partners at the Pennsylvania Department of Health (PADOH) have conducted numerous evaluations of environmental data and other public health activities at this site, including a comprehensive review of past exposure to contaminated groundwater, surface water, soil, sediment, and air in Health Consultation #8 for this site, dated April 2001. In this document, ATSDR and PADOH

concluded that past exposure to contaminated sediment and surface water in nearby seeps and in the Ackerly Creek did not threaten the health of people who came in contact with these media.[2] Additional data from November 2001 confirmed the migration of hexavalent chromium from contaminated site groundwater to the nearby Ackerly Creek, which feeds into Glenburn Pond, and found some accumulations of chromium in aquatic plants and invertebrates in Ackerly Creek and Glenburn Pond. Followup surface water sampling in June 2002 further established elevated levels of hexavalent chromium in Ackerly Creek and Glenburn Pond. In 2002, PADOH and ATSDR made recommendations regarding further evaluation of chromium levels in sportfish from Glenburn Pond.[3]

Glenburn Pond is contained by a dam that is in need of repair. NLT spent $38,000 in 1987 and $24,000 in 1995 to rebuild the dam, and the estimate for additional repairs in 2002 was $100,000. Continuous repairs to the pond have grown too costly for the non-profit trust to handle.[4] As a result, NLT recently announced plans to drain the pond. Some community members have suggested that volunteers relocate the fish before the pond is drained, but the concern was raised that the fish are too contaminated to relocate. ATSDR agreed to review the results from the fish tissue, surface water from the pond, and sediment samples PADEP collected from Glenburn Pond on May 11, 2006 to evaluate current contamination levels and the possibility of public health concerns under the current use scenario as a recreational pond, as well as any possible implications concerning relocating the fish before the pond is drained.

ATSDR Evaluation Process:

ATSDR uses health-based comparison values to evaluate if contaminants in the environment are found at levels that might affect public health. Comparison values are developed from available scientific literature concerning exposure and health effects. They are derived for each media (air, soil, water) and reflect an estimated chemical concentration that is not expected to cause harmful health effects. One type of comparison values utilized by ATSDR scientists are the "risk based concentration values" (RBCs) developed by the USEPA Region 3 for contamination found in fish.[5] Risk based concentration values are protective of the environment and human health and are developed using protective exposure scenarios, available reference doses and cancer slope factors. ATSDR compared the environmental sampling results from Glenburn Pond against each contaminant's health-based comparison values. ATSDR then evaluated any concentrations exceeding these screening comparison values against the likelihood of exposure (human contact). For example, we evaluated the recreational exposures people would have to the surface water, sediment, and fish from Glenburn Pond. Health-based comparison values are not developed specifically for human recreational dermal and/or ingestion contacts with *sediments* or *surface water* in a pond. To be conservative, ATSDR used *residential soil* and *drinking water* comparison values as surrogates for *sediment* and *surface water*. Residential soil and drinking water comparison values incorporate assumptions about frequent, daily

contact and/or ingestion, which would clearly overestimate the kinds of exposure even a very regular recreational user of Glenburn Pond would have to the sediments and surface water in the pond. Therefore, one can assume that if the contaminant levels are below even these residential soil and drinking water screening values, that exposures in a recreational surface water and sediment scenario to these contaminant levels would not pose a public health problem.

GLENBURN POND SAMPLING RESULTS

The May 2006 sampling event included two fish tissue samples composited from 10 fish (5 perch, 5 bass), five surface water samples, and five 0-6" sediment samples from Glenburn Pond. The surface water samples were described as being collected from station 1 - 1M; station 2 -0.5M; stream [Ackerly Creek] mouth; cove above stream mouth; and by church. The station 1 and 2 surface water samples were analyzed for all metals, while the remaining surface water samples were analyzed only for hexavalent chromium. The sediment samples were described as being collected from station 1; station 2; stream mouth; cove above stream mouth; and by church. All of the sediment samples were analyzed only for hexavalent chromium. Tissue from the fish composites were analyzed for lead, copper, total chromium, cadmium, mercury, and selenium. (Note, PADEP informed ATSDR that it is not possible for the state laboratory to analytically speciate chromium in fish tissue.) The following tables summarize the May 2006 sampling results from Glenburn Pond against relevant health-based screening comparison values.

Table 1. 2006 Glenburn Pond Sediment Sample Results

Contaminant	**Minimum concentration (mg/kg or ppm)**	**Maximum concentration (mg/kg or ppm)**	**Health-based comparison value (ppm)**
Chromium+6	<0.04	0.10	200 ppm (child RMEG) 230 ppm (residential soil RBC)

RMEG = Reference Dose Media Evaluation Guide
RBC = EPA R3 Risk Based Concentration

Table 2. 2006 Glenburn Pond Fish Tissue Results

Contaminant	**Minimum concentration (ug/g or ppm)**	**Maximum concentration (ug/g or ppm)**	**Health Based comparison value*** **(ug/g or ppm)**
Lead	0.030	0.033	n/a+++
Copper	0.454	0.806	54
Chromium (total)	0.337	1.339	4.1 (chromium+6) 2,000 (chromium+3)
Cadmium	<0.005	<0.005	0.68 (water) 1.4 (food)
Mercury	0.050	0.136	0.14 (methylmercury)
Selenium	<1	<1	6.8

*Used EPA R3 RBCs

+++No EPA R3 RBC available

Table 3. 2006 Glenburn Pond Surface Water Results

Contaminant	**Minimum concentration (ug/L or ppb)**	**Maximum concentration (ug/L or ppb)**	**Health-based comparison value (ug/L or ppb)**
Chromium+6	4.58	11	30 (child RMEG) 100 (adult RMEG)
Chromium (T)	<50	<50	100 (LTHA)
Cadmium (T)	<10	<10	2 ppb (chronic EMEG child) 7 ppb(chronic EMEG adult)
Lead (T)	1	1.8	0 (MCLG)
Cobalt (D)	<50	<50	100 (intermediate EMEG child) 400 (intermediate EMEG adult)
Manganese (T)	329	463	500 (RMEG child) 300 (LTHA)
Copper (T)	<10	<10	100 (intermediate EMEG child) 400 (intermediate EMEG adult)
Zinc (T)	<10	<10	3,000 (chronic EMEG child) 10,000 (chronic EMEG adult)
Nickel (T)	<50	<50	200 (RMEG child) 100 (LTHA)
Iron (T)	547	1,110	n/a[+++]
Magnesium (T)	2.9	2.99	n/a[+++]
Al (T)	<200	<200	20,000 (intermediate EMEG child) 70,000 (intermediate EMEG adult)

[+++]no ATSDR CV or EPA R3 RBC available
RMEG = Reference Dose Media Evaluation Guide
EMEG = Environmental Media Evaluation Guide
LTHA = Lifetime Health Advisory
MCLG = Maximum Contaminant Level Goal
T = Total, D = Dissolved (total most representative of potential most conservative ingestion exposure)

DISCUSSION

Sediment. The hexavalent chromium levels in the sediment samples do not exceed a health-based screening level, even using a residential soil, regular contact scenario CV. These levels do not represent a public health problem.

Fish. All the metals detected in these composite fish samples are below health-based screening levels and are not considered to be of public health concern, with the exceptions of mercury (essentially at same level as the comparison level) and lead (no comparison value available).

- No RBC has been established for lead in fish tissue. Possible lead exposures from fish are analyzed on a case by case basis. Using the maximum concentration of lead detected in the composite fish tissue samples (0.033 ppm), ATSDR evaluated whether a public health concern would exist if an adult or child regularly consumed sportfish from Glenburn Pond contaminated with this level of lead. ATSDR determined that it is not likely that this level of lead contamination would cause adverse health effects in adults or children, if these persons did not have any other elevated environmental exposures to lead (e.g., a child with exposures to lead-based paint or highly lead-contaminated soils).[6] The Glenburn Pond composite fish tissue lead results are lower than the average level of lead detected in fish statewide for the period 1986-2005 (0.118 ppm mean, 7.43 ppm maximum).[7]
- One of the composite fish tissue samples had a mercury level (0.136) nearly the same as the RBC screening level (0.14 ppm). The other fish tissue sample had about half that level of mercury (0.05 ppm). (For the purposes of this review, we assumed that all of the mercury reported in the fish tissue analyses was methylmercury -- this form of mercury is the form most commonly found in fish and is of the most concern for public health exposures.) Pennsylvania has established fish consumption advisory levels for mercury. These levels are designed to protect the most sensitive populations as well the general population, and are based on the EPA's Reference Dose (RfD) of 0.1 ug/kg/day (this approach is endorsed by the National Academy of Sciences). The mercury levels (including the maximum level) detected in the composite fish samples from Glenburn Pond fit within Pennsylvania's current one meal per week advisory level for mercury (0.13 ppm - 0.25 ppm). (Note, as of April 11, 2001, Pennsylvania issued a general, statewide health advisory for recreationally caught sport fish. That advice is that you eat no more than one meal (one-half pound) per week of sport fish caught in the state's waterways. This general advice was issued to protect against eating large amounts of fish that have not been tested for mercury and other contaminants.) Anglers and their families consuming fish from Glenburn Pond and following the one meal per week advisory should be protected from adverse health effects from mercury in these fish, assuming the maximum mercury level from the composite samples is representative of the maximum levels that might be found in fish from the pond. The Glenburn Pond mercury results are comparable to the levels of mercury detected in fish from across Pennsylvania for the period 1986-2005 (0.158 ppm mean, 1.205 maximum).[8]
- As indicated earlier, the total chromium results from the two composite fish tissue samples from Glenburn Pond were below health-based screening values. Because hexavalent chromium is the primary contaminant of concern at the Precision site, PADEP evaluated whether

the levels of total chromium in fish from Glenburn Pond were similar to levels in fish statewide. PADEP found that the total chromium level in 473 fish tissue samples from statewide samples collected from 1998-2004 had a mean value of 0.62 ug/g or ppm, with a maximum value of 5.71 ug/g or ppm. Thus, the total chromium results for the two composite fish samples from Glenburn Pond (0.337 ug/g or ppm and 1.339 ug/g or ppm) are well under the maximum value seen in the state and close to the mean for the state.[9]

In considering the information here, it is important to weigh in the benefits of eating fish as part of a balanced diet. Fish are an excellent protein source and are associated with reduced risk of coronary heart disease. The benefits of eating fish have been associated with low levels of unsaturated fats (e.g., omega-3 polyunsaturated fatty acids), which are essential nutrients. Saturated fats are linked with increased cholesterol levels and risks of heart disease. Fish also provide a good source of some vitamins and minerals. The American Heart Association recommends two servings of fish per week as part of a healthy diet.[10]

Surface Water. A few of the surface water results approach or slightly exceed health-based screening values (i.e., manganese, lead, cadmium). However, given the conservative approach of using residential drinking water comparison values in this review (which would assume 2/liters per day consumption for adults, and 1/liter per day for children), ATSDR does not expect that the levels of these metals in the surface water of Glenburn Pond would be a public health threat to recreational users of the pond with much lower ingestion rates (½ a liter or less a week).

Conclusions:

- Based upon the evaluated data from 2006, exposures to water, sediment, and fish from Glenburn Pond do not represent a public health hazard to recreational users of this pond, assuming anglers and their families follow the statewide health advisory for recreationally caught sport fish (no more than one ½ pound meal per week of sport fish caught in the state's waterways).
- The metals levels in the two composite samples of fish reviewed in this document are comparable to statewide levels, and there is not a public health reason to prohibit transport of these fish from Glenburn Pond to other locations.

Action Required/Recommendations:

- Provide this information in this AROA to PADEP, EPA, and local authorities.

Preparers of Document: Lora Siegmann Werner, MPH, ATSDR R3

Signature: _____ Date:

[1] Ackerly Creek Subwatershed Study, Final Report, December 2002. Presented to the PA Department of Conservation and Natural Resources by the Countryside Conservancy, LaPlume, PA.

[2] ATSDR and PADOH. HEALTH CONSULTATION #8: Past Exposure to Contaminated Groundwater, Surfacewater, Soil, Sediment, and Air and Answers to Community Questions, Precision National Corporation, Clarks Summit, PA.

[3] Emailed communication, Robert Stroman, PADOH to Raj Sharma, EPA, March 6, 2002.

[4] Ackerly Creek Subwatershed Study, Final Report, December 2002. Presented to the PA Department of Conservation and Natural Resources by the Countryside Conservancy, LaPlume, PA, available at http://www.atlas.keystone.edu/research/Ackerly/Ackerly.pdf

[5] Region III, Risk Based Concentration (RBC) Table, 2006, available at http://www.epa.gov/reg3hwmd/risk/human/.

[6] See evaluation of lead in fish as described in the ATSDR Health Consultation, Evaluation of Metals in Bullhead, Bass, and Kokanee from Lake Coeur D'Alene, Idaho, September 19, 2003. Lead levels in Glenburn Pond fish are comparable to lead in bass from the southern sampling area, and these levels were found not to be problem for regular adult or children consumers, http://www.atsdr.cdc.gov/HAC/PHA/coeurdalene/cda_toc.html.

[7] Fish Tissue Metals, PCBs, and Pesticides, 1986-2005, PADEP.

[8] Fish Tissue Metals, PCBs, and Pesticides, 1986-2005, PADEP.

[9] Emailed Communication, Carl DeLuca, Watershed Management Program, DEP NERO, to Robert Lewis and Joseph Ianuzzo, PADEP NERO, June 8, 2006.

[10] ATSDR Health Consultation, Evaluation of Metals in Bullhead, Bass, and Kokanee from Lake Coeur D'Alene, Idaho, September 19, 2003.